

5-5-00

Filter Change-out Management Review

Area: Dimensional Inspection in 9201-5E

Date and Time Discovered: Mid-morning 3-6-2000

Brief, General Description: Two filters in wall/room air conditioners in the Dimensional Inspection area were removed. There was no beryllium work plan (BWP) and the changing of air conditioner filters was not included in the existing BWPs for the area.

Activity Category: Normal Operations

Affected Operations Area, System, and/or Equipment: Dimensional Inspection area, including working surfaces, storage area, general operating area, and inspection equipment in the area.

Description/Chronology:

The events prior to and following the removal of filters from air conditioners in the dimensional inspection area are documented here in chronological order.

1-12-2000 MJR written to change out filters—MJR YW011940

2-21-2000 MJR discussed between area engineer and planner, and walk-down planned

2-24-2000 Walk-down cancelled due to unavailability of Industrial Hygiene

2-29-2000 Walk-down cancelled by Special Materials supervisor

3-3-2000 Walk-down cancelled due to priority work needed in Enriched Uranium

3-6-2000 The inspection area line supervisor signed in on BWP PCO-DI-001(a) at 08:20 (no personal air monitor was worn) and the department head signed in on BWP PCO-DI-001(b) at 08:44. They exited the area at 09:15 and 09:51 respectively. BWPs will be shown as "A" and "B" throughout this review. BWP PCO-DI-001(b), section 6, Description of work, stated "Hands-off tours and inspections. Personnel are not allowed to contact surfaces within a demarcated beryllium island." The BWP supplemental sheet included for section 6 "Personnel are allowed to walk into the Beryllium Area for visual observations. Therefore, "B" BWP does not allow for performance of work or filter removal. Entrance for hands on tours and inspections must enter on BWP # PCO-DI-001(a)."

- The department head removed two filters from the air conditioners to determine if the failure to adequately cool the area was due to failed air conditioner units or dirty filters. With the air filters removed the temperature began to decrease.

- The area engineer entered the area on "B" BWP at 09:34, 11:15, 12:20, and 14:47 to check the area temperature. He exited at 09:51, 11:16, 12:26, and 14:50 respectively. He wore required PPE.

- The area engineer questioned the removal of the filters with regard to the filter walk-down. Industrial Hygiene Representative 2 had been notified according to the Dimensional Inspection Department Head and walk-downs of the area for filter change-out were discussed. The line supervisor questioned if work should continue

and was told by the Department Head that the area should be okay for work to resume on 3-7-00.

-Material Control Supervisor entered the area at 10:05 and exited at 10:08.

3-7-2000 the area engineer entered the area at 07:20 on "B" BWP, put the filters in a bag, and sealed it with a "J" hook. The filters were placed in the bag in a manner so as not to disturb or dislodge particulate from the filters. The engineer exited the area at 07:22.

-No work is allowed on "B" BWP, including placing of filters in a bag.

-Inspector 1 worked in the area from 08:32 until 10:00 on "A" BWP and wore a personal breathing zone sampler (PBZS).

-Inspector 2 worked from 08:25 until 10:35 on "A" BWP and wore a PBZS.

-The Numerical Control engineer visited the area from 09:05 until 09:45 on "B" BWP to check a computer and wore protective equipment as described in the BWP.

-Inspectors 1 and 2 returned to the work area at 12:24 and 12:10 respectively and wore PBZSs.

-The PBZSs are typically worn, put on hold, then reworn for work later in the day. Prior to use on subsequent days, the cassettes are removed and the pump is recalibrated by Industrial Hygiene.

-Inspector 1 and 2 were concerned about the amount of dust in the area.

-At ~12:30 Inspector 2 noticed his throat was sore, his mouth was dry, and he was getting hoarse. Inspector 1's eyes had been watering and his throat was burning. Both inspectors determined that they should stop working in this area and exited the area at 13:10. Inspectors 1 and 2 decided to go to Medical.

-At ~13:00 the Area Supervisor and Department Head confirmed that Inspector 1 and 2 should stop working in the area and go to medical.

-At 13:23 the Material Control Supervisor 1 entered the operating area and exited at 13:26 on "B" BWP.

-At ~14:30 Inspector 1 and 2 discussed the situation with the Industrial Safety Organization Manager.

-At 15:20 the Industrial Hygiene Representative 1 who was asked to look into the situation by her supervisor, went into the operating area using "B" BWP, and exited at 15:25. The entry was made without the knowledge of PCO. No respirator or PBZS was worn. Required PPE was worn. There was no notice or warning on the entry to the area. An attempt was made to contact the area supervisor, but was unsuccessful due to the lateness of the day. The IH Rep 1 was familiar with the BWP and had discussed the BWP with the former IH Rep.

3-8-2000 No dimensional inspection was performed in the area.

-Inspector 1 and 2 went to Medical for a revisit per physician's request.

-At 08:00 the Dimensional Inspection Area Line Supervisor and Engineer entered the area, exiting at 08:15 and 08:05 respectively. Both signed in on "B" BWP and wore appropriate PPE.

-At 08:16 the Dimensional Inspection Area Line Supervisor entered the area on "B" BWP and wore appropriate PPE, exiting at 08:30.

-At 08:18 Industrial Hygiene (IH) Technician began taking samples in the dimensional inspection operating area on "A" BWP and exited at 08:37. No PBZS was worn. Required PPE was worn.

-At ~ 09:00 the walk-down on the filter change-out (MJR YW011940) occurred outside the beryllium area. Participants were Industrial Hygiene Representative 2, Dimensional Inspection Area Engineer, Filter Crew Planner, Utilities Supervisor, Dimensional Inspection area line supervisor.

-Walkdown of the filter changeout and subsequent filter change were on the area Plan of the Day. All activities regarding this event were communicated to the Operations Manager as they were happening.

-The Material Control Supervisor 1 entered the area on "B" BWP at 09:32 and exited at 09:35.

-Received sample results on personal monitors—all non-detectable. The results covered PBZSs for Inspectors 1 and 2, and were received about the time the IH Tech entered the dimensional inspection operating area.

3-9-2000 No dimensional inspection was performed in the area.

-Received sample results on smears and filter samples—from non-detectable to 1.24 micrograms on the Brown and Sharpe inspection table. Levels on the air conditioning filters were 0.299 and 0.354. Smear results are documented in IHS-08057 as samples A000680027 through A000680046.

-There is no official Y-12 Plant action level prior to the standard of 5 micrograms per 100 centimeters which causes extra attention, however, any smear sample approaching 5 micrograms usually causes the area to be spot- cleaned and resmeared.

-Filters were placed into beryllium waste.

3-10-2000 Filter crew tried to initiate work but determined BWP defined the area as a beryllium storage area and needed to be revised to reflect a beryllium area

-Inspectors 1 and 2 returned to medical. Inspector 1 was released; Inspector 2 was requested to return on Monday.

-Inspector 1 raised a concern with Medical and Industrial Safety personnel about the cleanliness of the inspection area and recommended cleaning it. The Industrial Safety Organization Manager relayed the concern to the area line supervisor on 3-10-2000 and to the organization manager via e-mail on Monday 3-13-2000.

-At 12:46 Material Control Supervisor 2 entered the area on "B" BWP, exiting at 12:51.

-A member of the filter crew returned with the revised BWP, 5E-Utilities-10, and replaced the filters between 13:23 and 13:37. He wore a PBZS that was evaluated as being non-detectable.

-A determination was made by the acting Dimensional Inspection Department Head, area line supervisor, and Product Certification Manager, as a result of PBZS and smear data, and the reinstallation of the air conditioning filters, to perform work in the area.

-Work in the area was performed on Friday evening by Inspectors 3, 4, and 5. PBZSs were worn and results were non-detectable.

3-11-2000 Inspectors 4, 5, and 6 worked in the area all day. PBZSs were worn and results were non-detectable.

3-13-2000 Inspectors 3 and 4 worked in the area. PBZSs were worn and results were non-detectable.

-Inspector 2 was released from restrictions by Medical.

Mid-March Began to work with the janitorial staff to get the general area cleaned. This was in response to the employee concerns regarding the general area cleanliness and the potential for residual beryllium contamination. No further work was performed until after cleaning was accomplished.

Immediate Actions Taken and Results:

Employees went to Medical as soon as they began having sore or burning throats, and watering eyes. Work was discontinued in the area. There were no actions taken to make note of the area conditions or discontinued work, and no additional signs posted on the door/entrance to the area. Smear samples were taken and a rush was placed on obtaining results of the smears and personal monitoring samples. Results of the samples were received. Personal monitoring samples were all non-detectable. Smears ranged from 1.24 micrograms on the surface of the Brown and Sharpe machine to non-detectable. The majority of the smear samples were non-detectable.

Operating Condition at the time of the incident:

The temperature in the inspection area had been elevated for several days, preventing work in the area. Upon removal of the filters, increased recirculating airflow was possible but was not measured.

Analysis of Actual vs. Expected Responses of Personnel and Equipment:

The employee who removed the filters should not have performed that action without planning the work. The area line supervisor was present when the filters were removed and questioned if work should continue in that condition. There was no BWP covering removal of the filters at the time they were removed. This is work typically done by crafts people and was work that should have been considered "hands-on" work not covered by the BWP the person had signed. Additionally the filter removal was not allowed under the "hands-on" BWP. The "hands-on" BWP supplemental sheet, item 6, states "This BWP does not apply to any maintenance activities except for job planning."

Inspectors 1 and 2 acted, as expected and stopped working when they detected their conditions needed attention.

Evaluation of Effects on Operations Area: None

Description of Root Cause: Inattention to detail, failure to follow conduct of operations and integrated safety management procedures, and failure to follow BWPs.

Suggested Corrective Actions:

1. Set up these two air conditioner filters to be changed on a repetitive schedule.
2. Evaluate type of filters used and potentially get improved filters.
3. Inform management and employees on Y60-551, *Stop Work/Restart Authority* procedure for executing stop work.
4. Get appropriate groups together to result in cleaning operating area.
5. Examine the potential for combining BWPs for future expanded work in the area.
6. Examine past smear, air, and filter data to get baseline of past result levels.
7. Sample clean filters to get background levels.
8. Determine the best way to mark an operating area to inform personnel that there is a concern and that the area should not be entered. Will use Y73-003, *Posting and Use of Accident Prevention Signs, Boundary Markers, Barricades, and Barriers*. Possibility of also removing the BWPs so that sign-in and entry cannot occur.
9. Examine the best way to release an operating area for work. Suggest that the Operational Safety Board review stop work conditions and corrective actions.
10. Consider making the air conditioner filters a beryllium island since they did have some detectable beryllium on the samples.
11. Review the "A" and "B" BWPs to identify and capture potential activities that need to be performed in the area, but are not presently covered. All activities that are performed in the area, which do not come in contact with the beryllium islands will be grouped onto the "B" BWP if possible.

Lessons Learned:

1. Work or activity should not be performed in a beryllium area without coverage by a BWP.
2. Employees should be responded to readily with regard to safety issues.

Attendees at the Management Review:

Andrea Zava, PCO Manager
Ken Mero, FEB Evaluator
Jim Harvey, PCO Inspector
Harlan Lynch, PCO Inspector
Sid Kelley, ATLC S&H
Darryl Johnson, ATLC S&H Rep
Jack Goss, Equipment Engineer
Sherrill Cook, Unit Manager/Supervisor
Emily Yowell, IH
Charles Krull, Utilities Manager
Craig Schmidt, U&I Planner
P. S. Greene, Jr, Chief Machinist Steward
R. A. Love, DM Manager
J. H. Gertsen, Mechanical & Mfg. Engineering Mgr.
D. F. Bennett, NC Engineer
K. D. St. Onge, NC Engineer
S. D. Easterling, Safety Manager

Personnel involved in the events:

Inspector 1-H. W. Lynch
Inspector 2-J. M. Harvey
Inspector 3-D. B. Freels
Inspector 4-P. H. Owens
Inspector 5-M. R. Jones
Inspector 6-F. Lay
Inspection Area Line Supervisor-S. L. Cook
Dimensional Inspection Area Engineer-J. A. Goss
Numerical Control Engineer-K. D. St. Onge
Industrial Hygiene Representative 1-E. E.Yowell
Industrial Hygiene Representative 2-V. Phillips
Industrial Hygiene Technician-C. A. Hubbuch
Filter Crew Planner-C. Schmidt
Utilities Supervisor- T. Gross
Filter Crew-D. L. Beaty
Dimensional Inspection Department Head-R. A. Love
Acting Dimensional Inspection Department Head-S. G. Jessing
Industrial Safety Organization Manager-S. D. Easterling
Material Control Supervisor 1-C. J. Posey
Material Control Supervisor 2-G. W. Hedgecoth